Claims

1. Fuel cell with

- a first electrode (3) and a second electrode (4), one of which is formed as the cathode and the other as the anode,
- a layer (5) that is permeable at least to protons, with catalytic activity or an additional catalytic material in the region between the first electrode (3) and the second electrode (4),
- a fuel delivery device to feed in a fuel (H_2), and
- a reactant delivery device to feed in a reactant (O_2), which reacts with protons from the fuel (H_2) to generate current, with the fuel delivery device and the reactant delivery device being positioned on the side of the first electrode and on the side of the second electrode, respectively,

characterized in that

- the fuel (H_2) is integrated into the material of one of the electrodes (3) formed as the fuel delivery device (3) and/or of a layer adjacent to it.

2. Fuel cell according to Claim 1 in which the fuel delivery device (3) consists of a contacted material that is treated with the fuel.

3. Fuel cell according to Claim 1 or 2 in which the fuel delivery device (3) contains palladium (Pd).

4. Fuel cell according to a foregoing claim in which hydrogen (H_2) is integrated into the fuel delivery device (3) as the fuel.

5. Fuel cell according to a foregoing claim in which the reactant infeed device for the infeed of the reactant (O_2) consists of the space surrounding at least the second electrode or the space surrounding the reaction region.

6. Electrical circuit (7; 16) with
a fuel cell (1) that has a fuel delivery device (3) according to one of the foregoing claims.

7. Electrical circuit according to Claim 6 produced as a CMOS circuit.

8. Electrically operated device with
- a control device (17; 27) for controlling a current flow or an energy infeed and
- an integrated source of current,
characterized in that
the source of current is produced as a fuel cell with a fuel delivery device according to a foregoing claim.

9. Fuel cell, circuit, or electrically operated device according to one of the foregoing claims with
a control device (17; 27) to activate the electrochemical reaction in the fuel cell (1) or to complete the electrical circuit through the electrodes (3, 4) of the fuel cell (1).

10. Fuel cell, circuit, or electrically operated device according to Claim 9 in which the control device (27) consists of a closed closure device, wherein the space around the reaction region of the reactant (O_2) has no reactant and wherein reactant from external space enters the reaction region by opening the closure device (27).

11. Fuel cell, circuit, or electrically operated device according to a foregoing claim, with at least the fuel cell being designed as a replaceable module.

12. Fuel cell, circuit, or electrically operated device according to a foregoing claim, with a fuel sensor (18) that is positioned in the fuel delivery device (3) and/or in the reaction region between the protons and the reactant, to determine the available or current amount of fuel.

13. Method for manufacturing a fuel cell in which a first electrode (3), a second electrode (4), and a proton-permeable layer (5) with catalytic activity separating them are produced, or in addition to the layer (5) a catalytic material is produced between the electrodes (3, 4), **characterized** in that
a fuel delivery device is produced as an integral part of one of the electrodes (3) or as a layer adjacent to it, with the material of the fuel delivery device being treated with fuel during its preparation or thereafter.

14. Fuel cell, especially according to a foregoing claim, with
- a first electrode (3) and a second electrode (4), one of which is formed as the cathode and the other as the anode,
- a layer (5) that is permeable at least to protons, with catalytic activity or an additional catalytic material in the region between the first electrode (3) and the second electrode (4),
- a fuel delivery device to feed in a fuel (H_2), and
- a reactant delivery device to feed in a reactant (O_2), which reacts with protons from the fuel (H_2) to generate current, with the fuel delivery device and the reactant delivery device being positioned on the side of the first electrode and on the side of the second electrode, respectively, **characterized** in that
- the reactant (O_2) for generating a given amount of current is integrated into the material of one of the electrodes produced as a reactant delivery device (3) and/or in a layer adjacent to it
- and the fuel cell is designed so that only reactant from this reactant delivery device can react with the fuel.

15. Fuel cell according to Claim 14 in which the reactant delivery device (3) consists of a contacted material that is treated with the reactant.

16. Fuel cell according to Claim 14 or 15 in which oxygen (O_2) is integrated into the reactant delivery device.

17. Electrical circuit (7; 16), particularly a CMOS circuit, with a fuel cell (1) that has a reactant delivery device (3) according to one of Claims 14-16.

18. Electrically operated device with

- a control device (17; 27) for controlling a flow of current or an infeed of energy, and
- an integrated source of current,

characterized in that

the current source is produced as a fuel cell with a reactant delivery device according to one of Claims 14-17.

19. Fuel cell, circuit, or electrically operated device according to one of Claims 14 -18 with

a control device (17; 27) for activating the electrochemical reaction in the fuel cell (1) or for completing the electrical circuit through the electrodes (3, 4) of the fuel cell (1).

20. Fuel cell, circuit, or electrically operated device according to Claim 19 in which the control device (27) consists of a closed closure device, wherein the space around the reaction region of the fuel with the reactant (O_2) has no fuel, and wherein fuel from the external space enters the reaction region by opening the closure device (27).

21. Fuel cell, circuit, or electrically operated device according to one of Claims 14-20, wherein

at least the fuel cell is designed as a replaceable module.

22. Fuel cell, circuit, or electrically operated device according to one of Claims 14-21, with

a reactant sensor (18) that is positioned in the reactant delivery device (3) and/or in the reaction region between the protons and the reactant, to determine the available or current amount of reactant.

23. Fuel cell, circuit, or electrically operated device according to one of Claims 1 -12 or 14-22, with

a circuit for measuring the resistance of the fuel delivery device or of the reactant delivery device (3), for determining the remaining amount of fuel or of reactant.

24. Method for manufacturing a fuel cell in which a first electrode (3), a second electrode (4), and a proton-permeable layer (5) with catalytic activity separating them are produced, or in addition to the layer (5) a catalytic material is produced between the electrodes (3, 4), **characterized** in that
a reactant delivery device is produced as an integral part of one of the electrodes (3) or as a layer adjacent to it, with the material of the reactant delivery device being treated with reactant during its preparation or thereafter.

25. Sensor for determining the amount of a fuel or of a reactant in the sensor environment, with
- a fuel cell (1°), particularly a fuel cell according to a foregoing claim, and
- a measuring device (30) for determining the strength of the current or the voltage generated by the fuel cell as a measured variable parameter for the fuel or reactant (O_2).